

LETTERS

fonamides. In fact, the article states, "Although sulfonamides have been the classic agents for treating nocardial infections it is now becoming apparent that other antibacterial agents are efficacious." This hardly denies the importance of sulfonamides.

The third point concerns the length of therapy and the denial that 77 days is "extended treatment." I am unable to locate the statement "extended treatment" in the article. However, it does touch on this point by stating, "To be successful, therapy must be aggressive even to the point of extending treatment for several months to a year beyond clinical cure." The patient was seen last thirteen months after the conclusion of therapy and was still well despite the continuation of immunosuppressive therapy. This does suggest that the treatment may have been adequate.

I would appreciate further information on what factor inspired this communication.

ERVIN EPSTEIN, MD
Oakland

More on Electromyography

TO THE EDITOR: I would like to respond to a letter on who should perform electromyography, written by Nickel and Ashley [Nickel VL, Ashley EJ: On the performance of electromyography (EMG) (Letter to the Editor). *West J Med* 120:500-501, Jun 1974]. I should say that any rationale for non-qualified individuals to perform electrodiagnosis is difficult for me to understand. A diagnostic test on which decisions are made with respect to surgery, disability, serious prognoses and recommendations for changes in life style should be performed by the most qualified individuals possible.

The American Association of Electromyography and Electrodiagnosis, the only organization in this country exclusively devoted to promoting the technique of electromyography and electrodiagnosis, has recently adopted a resolution indicating that only a physician-specialist with additional training in clinical neurophysiology and electrodiagnosis should be involved in the performance of the test.

There is a common misconception that electromyography is similar to electrocardiography, or electroencephalography, this is—a record made by a technician and interpreted later by a physician-specialist. This is not so, since the electrical activity is dependent on the electromyographer's

actions at a given moment and is not recorded. Furthermore, there are no standard leads but rather more than 400 muscles to be investigated and many accessible nerves to do nerve stimulation studies. Furthermore, the examination is planned after an appropriate history and physical examination and then modified as the electromyographic findings unfold. Such a procedure is impossible for a technician no matter how well trained to perform.

My answer to Drs. Nickel and Ashley would be *NO* test is better than a test poorly performed which may mislead the referring physician.

ERNEST W. JOHNSON, MD
*Professor and Chairman
Department of Physical Medicine
Ohio State University
Columbus*

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TO THE EDITOR: For over twenty-five years diagnostic needle electromyography has been performed by physicians. These physicians have almost entirely been comprised of specialists in physical medicine and rehabilitation, or specialists in neurology. The standard of practice throughout the United States and California is to have diagnostic needle electromyography performed by physicians specializing in these fields.

Over these past thirty years, a tremendous amount of information has accumulated in the field of diagnostic electromyography and a specialty organization, the American Association of Electromyography and Electrodiagnosis, has been in existence for many years. Our association, the A.A.E.E., has constantly strived to improve the training of physicians performing electromyography and to promote advancements and the dissemination of knowledge in electromyography. It is our feeling that a physician practicing diagnostic needle electromyography not only must have an excellent background in neurophysiology, neuroanatomy, and kinesiology but also should have formal education and experience in skeletoneuromuscular disorders, particularly those in which diagnosis through electromyography plays an important role. Within the last two years the American Board of Physical Medicine and Rehabilitation has considered that formal training in electromyography is so important as to make it an integral part of the residency training program.

Each resident in physical medicine and rehabilitation is now required to perform and document at least 200 diagnostic needle EMG's on selected patients, under direct supervision of an experienced electromyographer.

Residents in neurology are also offered training in diagnostic needle electromyography, and many neurologists in the state of California perform this diagnostic procedure. The tremendous depth and scope of electromyography both in research and clinical applications is reflected by the three volume edition, *New Developments in Electromyography and Clinical Neurophysiology*, edited by Desmedt, published by S. Karger, 1973, to cite but one of many works in this field. A review of the table of contents of these three volumes will readily reveal the enormous scope and complexity of the field, and will quickly dispel the idea that a physical therapist can or should do diagnostic needle electromyography. I personally know of no physical therapist who does diagnostic needle electromyography but know of several who are doing electromyography using skin electrodes in kinesiological research study. The type of information in this type of study is entirely different from the kind of information received in diagnostic needle electromyography. In view of the standard of practice of electromyography in the United States and California any physical therapist doing diagnostic needle electromyography would be guilty of malpractice. With the great shortage of physical therapists available to perform the important work of physical therapy for which they were trained I find it most difficult to understand the logic of trying to divert them into a new field. The opinion of Dr. Nickel and Mr. Ashley [West J Med 120: 500-501, Jun 1974] is not shared with physicians qualified to do electromyography.

A list of qualified physician electromyographers may be obtained by writing for the directory of the American Association of Electromyography and Electrodiagnosis to Dr. W. C. Wiederholdt, secretary, 3350 La Jolla Village Drive, San Diego, California, 92161. If Dr. Nickel is unable to obtain a qualified electromyographer to perform the EMG examinations at Rancho Los Amigos, he may call me at my office (213) 542-8157. I would be happy to assist him in locating a qualified physician electromyographer.

WILLIAM J. LAJOIE, MD

Associate Clinical Professor Rehabilitation Medicine
L.A. County - U.S.C. Medical Center
Electromyographer, Orthopaedic Hospital
Los Angeles

More on Electromyography

TO THE EDITOR: Dr. Vernon L. Nickel's enthusiastic support for physical therapists performing electromyography [Nickel V, Ashley EJ: On the performance of electromyography (EMG) (Letter to Editor). West J Med 120:500-501, Jun 1974] flows from a premise that "a physical therapist is particularly appropriate to this type of examination because of his strong background in anatomy and particularly in functional anatomy which, in actual fact, often surpasses many modern trained physicians." He also states an untested conclusion that "some physical therapists have become proficient in performing EMG's."

The conclusion that knowledge of functional anatomy is sufficient a basis on which to build skill in electromyography is obviously erroneous. An electromyogram is an electrophysiological assessment of a patient's motor system and there is far more to test than looking at a few potentials published in textbooks which are increasingly under revision in this field. The training of the eyes and the ears of a physician to the artifacts that a machine produces for muscle and nerve activity takes years, despite close supervision. There is no way to satisfactorily record the study so that it can be reviewed at a later time. Like a surgical procedure, it must flow depending upon the immediate information obtained and the implications of an improperly drawn conclusion are enormous. A "sharp wave" on a report often "justifies" a sharp knife the next morning, and there is no going back.

Is it reasonable to assume that a physical therapist is only going to examine the simple cases and, in a new and delightful outlet, easily admit that he has strayed over his head? It is human that a report will be made, and reports can appear profound. The faith that can be placed in an electromyographic report depends upon the quality and demonstrated integrity of the electromyographer. It, therefore, becomes a matter of conscience when a physician refers one of his patients to another for an answer from which he will possibly undertake hazardous acts.

The issue may come into better comparative perspective if each physician would consider if he would permit his patients to undergo contrast